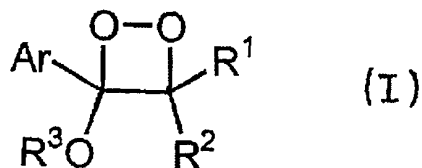
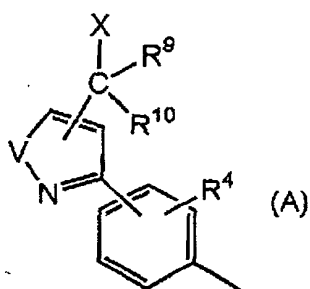


WHAT IS CLAIMED IS:

1. A 1,2-dioxetane derivative of the formula (I):

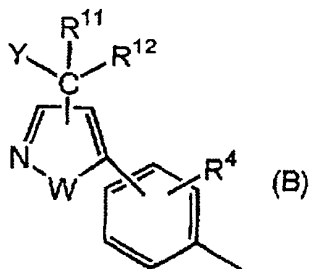


wherein each of R¹ and R² which are independent of each other, is a hydrogen atom, an alkyl group or an aryl group, or R¹ and R² may together form a cyclic or polycyclic organic ring group spiro-bonded to the dioxetane ring, R³ is an alkyl group or an aryl group, or R³ and R¹ or R² may together form a condensed ring containing the dioxetane ring and a hetero atom, and Ar is a group of the formula (A):



wherein R⁴ is a hydroxyl group, an alkoxyl group, an aralkyloxy group, a group of -OSi(R⁵R⁶R⁷) (wherein each of R⁵, R⁶ and R⁷ which are independent of one another, is an alkyl group or an aryl group), a phosphate group or a group of -S(C=O)R⁸ (wherein R⁸ is an alkyl group or an aryl group), each of R⁹ and R¹⁰ which are independent of

each other, is a hydrogen atom, an alkyl group, an aryl group or a halogen atom, X is a halogen atom, and V is an oxygen atom or a sulfur atom, or a group of the formula (B):

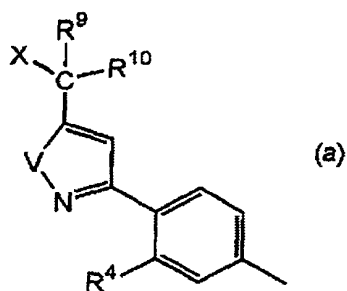


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wherein R^4 is the same as R^4 in the above formula (A), each of R^{11} and R^{12} which are independent of each other, is a hydrogen atom, an alkyl group, an aryl group or a halogen atom, Y is a halogen atom, and W is an oxygen atom or a sulfur atom.

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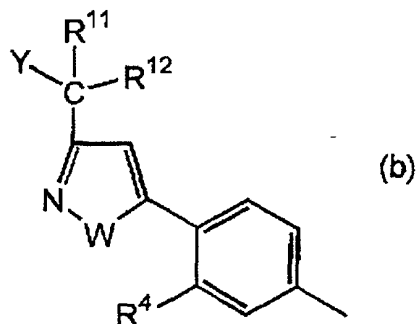
2. The 1,2-dioxetane derivative according to Claim 1, wherein Ar is a group of the formula (a):



wherein R^4 , R^9 , R^{10} , X and V are the same as R^4 , R^9 , R^{10} , X and V in the above formula (A), or a group of the formula (b):

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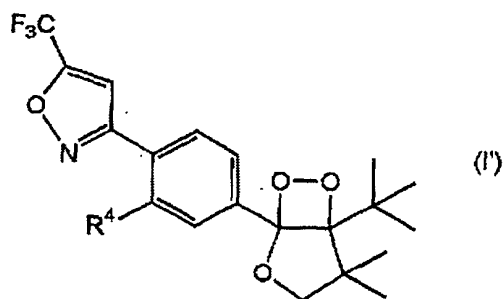
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wherein R^4 , R^{11} , R^{12} , Y and W are the same as R^4 , R^{11} , R^{12} , Y and W in the above formula (B).

3. The 1,2-dioxetane derivative according to Claim 1,
 5 wherein R^3 and R^1 or R^2 together form a condensed ring of a dioxetane ring and a furan ring, and R^2 or R^1 which does not form the condensed ring, is a C_{3-4} alkyl group.

4. The 1,2-dioxetane derivative according to Claim 1, which is represented by the formula (I'):



10 wherein R^4 is the same as R^4 in the above formula (A).

5. A chemiluminescent reagent which contains the 1,2-dioxetane derivative as defined in Claim 1.

6. A luminescence method which comprises decomposing

15 the 1,2-dioxetane derivative as defined in Claim 1 to

have chemiluminescence generated.

7. The method according to Claim 6, wherein the chemiluminescence is generated in the absence of any other enhancer.

5 8. A measuring method which comprises measuring a substance to be detected, in a test sample, by means of the luminescence method as defined in Claim 6.

9. A luminescence method which comprises letting a compound having a 1,2-dioxetane structure emit light in a
10 protic solvent in the absence of any other enhancer.

10. The method according to Claim 9, wherein the luminous quantum yield is at least 1%.

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